TWf NZ TECHNICAL GUIDANCE NOTE TGN 01: Engineered Scaffold (CPEng)

1.0 Introduction

This guidance note is provided to assist anyone involved in the commissioning, specification or determination of scaffolds, to readily identify whether a proposed scaffold requires CPEng design or verification.

2.0 Requirements of the WorkSafe Scaffolding in New Zealand Good Practice Guideline

All scaffolding must be in accordance with the *WorkSafe Scaffolding in New Zealand Good Practice Guideline*. This section summarises the requirements of that WorkSafe GPG in respect to what is considered by the regulator to require assessment by a CPEng.

Scaffold systems and components must also comply with the AS/NZS1576 suite of standards (or equivalent) and a CPEng will be expected to be competent in the use of these standards.

Table 2.1 – Scaffold description

A description of the scaffold requirements and details (loading, height, stability, foundations, application and components) will determine whether a CPEng design or check is necessary.

		Standard Scaffold	Engineered Scaffold
Loading	What is the scaffold duty loading?	Scaffold bays are rated light, medium or heavy duty; and bay sizes and duty rating conform with the manufacturer's instructions and the GPG.	Special duty scaffolds (unless there is sufficient information and structural values to calculate loads); Proprietary scaffolds that do not comply with the manufacturer's information.
	Have all scaffold loads been verified? (Dead, duty/live, environmental, impact)	Yes	No
	Fully Sheeted (e.g., shrink-wrap, plywood, corrugated plastic etc., including temporary roofs)	No	Yes
	Screened (e.g., scrim, netting, mesh, shade cloth etc.)	Yes, when the Check Category is Cat 0 or Cat 1, based on the Risk versus Consequence Assessment for each case.	Yes, when the Check Category is Cat 2 or Cat 3, based on the Risk vs Consequence Assessment.
	Falsework or propping.	Verified loads and supporting structure, loads supported by proprietary system complying with manufacturer's information.	Loads not verified; supporting structure not verified; falsework system does not comply with manufacturer's information.
Height	Tube and Coupler	<33m	>33m
	Proprietary Systems	As per manufacturers spec.	Outside spec.
Stability	Material capacities and strength of supporting structure have been verified?	Yes	No
	Can ties be installed according to manufacturer's instructions or GPG?	Yes	No
	Buttress / rakers comply with manufacturer's information?	Yes	No
	Does the scaffold require ballast?	No	Yes
	Height to base width ratio maximum 3:1 (For untied scaffolds higher than 2.0m)	Yes	No
Foundations / Supporting Structure	Has the load-bearing capacity of the ground or other bearing structure been verified?	Yes	No*
	Is the scaffold erected directly from a supporting structure, roof, veranda or balcony?	No	Yes*
	Is the scaffold a supporting structure for a swinging stage?	No	Yes*
	**Where an engineering assessment is required of the supporting structure, the CPEng will need to calculate and verify the design loadings imposed by the scaffold, as well as the capacity of the structure supporting them, regardless of whether the scaffold is standard or not.*		
Application and Components	Does the scaffold comply with the manufacturer's specification or instructions?	Yes N/A	No
	Have components from different scaffold systems been proven as safe to combine?	Yes N/A	No
	Additional components are added to a proprietary system that cannot be installed in accordance with the GPG?	No	Yes
	Is the scaffold a mast-climber?	No	Yes

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Application and Components	Is it a swinging stage?	Proprietary stage and roof rig installed to manufacturers specification and to AS/NZS1576.4	CPEng / Bespoke
	Being used as an event stage platform supporting people or materials?	No	Yes (may require a Producer Statement)
	Does the scaffold use a safety a net, a horizontal lifeline, a life rail system?	No	Yes
	Use of a mechanical lifting appliance exceeding an imposed load of 250kg?	No	Yes

Note: Any descriptors that align with "engineered scaffold" require CPEng verification.

3.0 Recommendation from the TWf

Further to the requirements of the WorkSafe GPG, it is recommended an assessment of the risk (to human life, environment and commercial) posed by the scaffold in the event of a failure is carried out, to determine the level and independence of checking required.

This approach is consistent with *TWfNZ GPG01:19 Temporary Works Procedural Control*.

Table 3.1 – Risk Category

This task-specific risk assessment should be carried out by the scaffolder and verified by the Main Contractor (TWC) responsible for the site. See TWf NZ TGN05.23 Temporary Works Risk Assessment and Categorisation for detailed descriptions of Categories for Consequence of Failure versus Design Complexity, which determine the Check Category from Cat 0 to Cat 3. The Temporary Works Risk Assessment Matrix is reproduced here.

Check Category		**Consequences of Failure Risk**			
		Minor	Significant	Major	Catastrophic
Design Complexity Risk	Basic	Cat 0	Cat 0	Cat 1	Cat 2
	Simple	Cat 1	Cat 1	Cat 2	Cat 2
	Involved	Cat 2	Cat 2	Cat 2	Cat 3
	Complex or Innovative	Cat 2	Cat 3	Cat 3	Cat 3

Table 3.2 – Check requirement

The check category descriptions provided below are in accordance with TWfNZ GPG01:19 Temporary Works Procedural Control.

Check Category	Minimum Competency *	Independence of Checker
Cat 0	The Designer and Checker should be suitably competent and experienced.	The check may be carried out by another member of the site or design team.
Cat 1	The Designer and Checker should be suitably competent and experienced.	The check may be carried out by another member of the site or design team.
Cat 2	The Designer and Checker should be suitably competent and experienced. The Checker should be a CPEng Engineer.	The check should be carried out by an individual not involved in the design and not consulted by the Engineer.
Cat 3	The Designer and Checker should be suitably competent and experienced. The Designer and Checker should be CPEng Engineers*.	The check should be carried out by another organization.

* It should be noted that there may be special cases where the Designer can demonstrate suitable competency and experience for complex or innovative designs without holding CPEng status, for example Scaffolding Certificate of Competence, Advanced. In these cases, it is essential that the Checker is a CPEng Engineer.

Notes:

- This guidance is intended to be complimentary and non-contradictory to existing NZ Industry guidance at the time of publication.
  - Should there be any information contained here that you believe is otherwise inconsistent with industry best practice, please send your comments to temporary.works@engineeringnz.org
- All temporary works including scaffolding should be co-ordinated in accordance with TWfNZ GPG01:19, see https://www.engineeringnz.org/join-us/groups/temporary-works-forum-nz/.